ZANZIBAR PROTECTORATE

Annual Report

OF THE

Department of Agriculture

1951

ZANZIBAR

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ZANZIBAR PROTECTORATE

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SECTION A. AGRICULTURE IN THE PROTECTORATE

1. General

An exceptionally large clove harvest was completed early in the year and the prices of cloves and coconut products remained much above normal throughout the year. The resulting prosperity and affluence were enjoyed by all sections of the community and money was freely spent on imported foodstuffs and luxury goods.

Ample supplies of imported food, particularly rice, were available in the shops and the less attractive and cheaper foodstuffs such as beans, maize and sorghum meal were difficult to sell. Even rice, of poor quality from Burma and Siam, was re-exported in the latter part of the year. Sugar was in short supply for a few weeks during the year and at no time in free supply. The price of this commodity rose steeply.

Locally grown foodstuffs were plentiful with good crops of cereals and roots and ample supplies of fruit and vegetables in the local market.

The year ended with the sombre prospects of a rapidly falling market for copra and coconut oil, a poor current crop of cloves and little hope of another bumper crop for some considerable time.

2. Weather

In Zanzibar Island the main rains were delayed and did not start until late April. For a period of six weeks thereafter rainfall was heavy in most areas of the district and it was expected that normal conditions would prevail. At the end of May, however, there was an abrupt cessation of rainfall and for a period of nearly two months no rain other than light scattered showers was precipitated so that, by the end of August, rainfall figures were considerably below normal. In Pemba the long rains, although slightly later than usual, were excellent; at no time being so heavy as to cause serious damage to crops or land but being in sufficient quantity to fill streams, wells and lakes. Pleasant showery weather continued into September.

The short rainy season, which is normally expected in Novemer and December, was exceptional in both islands. Records for the last thirty years show an average for the last quarter of the year of 18.99 inches and that of highest individual year so far recorded, 33.53 inches. This year, however, conditions were quite abnormal and, not only did the rain start much earlier and continue longer than usual, but it also fell with

considerably more violence. Towards the end of December, when some heavy thunderstorms accompanied by high winds were experienced, intensities of rainfall verging on 4 inches per hour were observed for short periods. The total fall for the three months of the *vuli* rains this year amounted to no less than 40.79 inches and it is of interest to note that according to our records this figure has only twice before been exceeded for a three-month period and, on those occasions, for the three months of the main or *masika* rains of March, April, and May. As a result of this very wet *vuli* season, the totals for the year at all stations in the Protectorate were considerably above normal.

The partial failure of the long rains in Zanzibar had a somewhat adverse effect on the rice crop but conditions for the growth of other crops were quite satisfactory. The heavy rain during the last quarter damaged the clove crop in that it often prevented the rapid drying of the picked buds with a deleterious effect on quality.

3. Principal Crops

Cloves. The picking of *vuli* cloves of the 1950–51 season ended in January. The crop was an exceptionally large one having been exceeded only once previously. The Pemba crop was a record for that island. The total harvest amounted to 43,413,079 lb. or 1,240,374 frasilas. Pemba's contribution was 37,862,505 lb. or 1,081,786 frasilas making 87.2 per cent of the whole.

As might be expected after such a bumper crop, the 1951-52 crop has been a poor one. Some 3½ lakhs of frasilas was estimated for the whole season and at the end of the year some 6,182,856 lb. had reached the market. This is equal to 176,653 frasilas of which Pemba's contribution was 155,759 frasilas. The harvest was not completed at the end of 1951 as *vuli* cloves had yet to be reaped in small quantities.

The Clove Growers' Association fixed the new season's buying prices for cloves and stems on 1st July, 1951, at Shs. 175/- per 100 lb. of fair quality cloves in Zanzibar and Shs. 20/- per 100 lb. of commercial quality clove-stems. At this price the Association purchased no cloves, all being taken up by local exporters. The Association's selling price of Shs. 200/- for Grade II cloves was therefore nominal.

Exports of cloves during the calendar year amounted to 26,060,817 lb or 744,595 frasilas, well over the average annual production. The bulk of the crop again went to the Far East, Singapore and Indonesia taking 54.48 per cent of the whole. India and Pakistan took 27.58 per cent, U.S.A. 8.21 per cent and the United Kingdom 3.49 per cent. The Clove Growers' Association purchased the entire production of clove stems for local distillation and some 309,686 lb. of clove oil were exported.

The "sudden death" and "die-back" diseases of the clove continued to take toll of trees in both Zanzibar and Pemba but it is gratifying to record that the causal organism of die-back has been discovered. It is a fungus provisionally allocated to the genus *Cryptosporella* and it is now possible to advocate control measures for this disease. The problem of "sudden death" still awaits elucidation.

Coconuts and Copra. The year's crop of coconuts was a poor one and the export figures for the main products were as follows:—

	Exported	*Copra equivalent tons.*
Coconut oil	101,964 *cwt.*...	8,499
Coconut cake	64,286 „ ...	–
Soap	4,693 „ ...	235
Copra	25 tons	25
	Total ...	8,759

The average annual production of copra is approximately 12,000 tons.

The Ministry of Food continued to purchase the exportable surpluses of coconut oil and copra at contract prices of £122 per ton f.o.b., naked, for oil and £76 per ton for copra. These prices favoured the production and export of oil and almost the entire crop of copra was purchased by millers and processed locally. At the end of the year representatives of the copra trade and producers preferred not to contract for a further period with the Ministry but to sell their produce on the open market.

Prices for copra in the local market remained high and steady throughout the year. Government Plantation copra was sold at an average price of Shs. 59/65 per 100 lb., over Shs. 12/- more than last year.

On 1st January the new Copra Board should have been formed to replace the Cop a Cess Board whose existence terminated with the repeal of the Copra Cess Decree, 1947. Certain political considerations led to a deadlock between those interests which were to be represented on the Board and, in spite of many efforts, the situation remained unchanged during the year and no Board was formed. This resulted in a serious slowing-down of activities financed from Cess funds.

Research work continued into the pest of coconuts *Theraptus* sp., which causes premature nut fall and gumming disease. The Entomologist, who had been kindly lent by the Director of Clove Research to investigate the problem at the request of and following initial investigations by the Department of Agriculture, was able to secure greatly enhanced yields of nuts on an experimental scale by making direct applications of insecticide to kill the sucking bugs. He also made further investigations into the relationship between Theraptus and predatory ants.

4. Minor Export Crops

The increased production of chillies, which has been a feature of minor crop production in recent years, was fully maintained and shows clearly how successful the work of the Department has been in popularising this most useful crop.

Chillies Exports

Year	*Cwt.*	*Value* £
1945 ...	60 ...	240
1946 ...	84 ...	498
1947 ...	100 ...	597
1948 ...	347 ...	1,631
1949 ...	308 ...	2,002
1950 ...	513 ...	6,821
1951 ...	891 ...	12,133

The Clove Growers' Association maintained a guaranteed buying price of Shs. 120/- per 100 lb. for chillies throughout the year but most of the crop was purchased by commercial exporters.

Kapok, the next most important minor crop also maintains a steady contribution to the domestic exports and has greatly increased in value in recent years.

Kapok Exports

Year	*Cwt.*	*Value* £
1948 ...	619 ...	3,542
1949 ...	482 ...	4,141
1950 ...	832 ...	9,657
1951 ...	597 ...	11,024

The coir fibre industry comes next in importance and, at present, almost all the produce is manufactured by hand. An important activity of the Copra Board is the establishment of a coir fibre extracting plant, the erection of which commenced in the latter part of the year. Commercial firms are also interested in the production of coir by machinery and it is likely that a considerable increase in the export of this produce will take place in the next few years.

The export of fresh fruit to the mainland territories and as ships' stores is also increasing in value and, during the year, a Colonial Development Scheme for the expansion of the fruit industry was approved and nursery work started.

Official figures for the export of tobacco have been very low during the last two years although there has been no apparent decrease in the acreage of the crop planted. Local tobacco is mainly exported to Somalia where a Government Monopoly controls the import and sale of this commodity. The Clove Growers' Association buys for the Monopoly at declared prices in Zanzibar but undoubtedly better prices are offered by local competitors. Large quantities are thought to have been taken by dhow traffic during the last two years which are not included in the official export returns.

Mangrove bark stripping is still prohibited pending the recovery of the forests from the heavy exploitation during the war years. Derris is slowly becoming more popular in spite of the long period of $2\frac{1}{2}$ years needed for this crop to mature. A consignment of 1,452 lb. shipped to Australia by the Clove Growers' Association on behalf of growers during the year realised Shs. 3,277/- which, after deducting transport and similar charges, was paid to growers at the rate of Shs. $1/80\frac{1}{2}$ per lb. of dried root, a very useful return for a crop that will yield as much as 800 lb. of dried root per acre.

Cocoa cultivation continues to expand very slowly. Further samples of locally produced cocoa were sent to manufacturers by the Colonial Products Advisory Bureau and were very well reported on. The reports are given in detail on page 10. It is hoped to commence exporting small commercial consignments, mainly from Government Plantations, next year and local interest will undoubtedly increase when sales are actually being made.

A new and potentially important minor industry was developed during the year by the increased export of seaweed, *Eucheuma* sp., to Europe. Exports in 1951 totalled 7,758 cwt. valued at £19,045. Legislation was introduced to organise the culling of the weed by a system of licensing the collection in specified areas and to impose a royalty of £5 per ton on all seaweed exported from the Protectorate.

5. Food Crop Production.

In spite of the demands of the clove harvest, which takes many cultivators away from their homes, a good crop of rice was obtained. The yield, compared with previous years, was as follows:—

	Pemba	*Zanzibar*	*Total*
			tons paddy
1947 ...	4,585 ...	5,700 ...	10,285
1948 ...	6,365 ...	9,780 ...	16,145
1949 ...	2,500 ...	4,000 ...	6,500
1950 ...	6,893 ...	8,750 ...	15,643
1951 ...	9,215 ...	6,226 ...	15,441

During the planting and tending of this crop, about sixty cultivators tried out the application of artificial fertilisers on small areas of their land. The manures were specially imported for them by the Clove Growers' Association. Practically all those who tried them were fully satisfied with the results obtained and it was hoped that the use of fertilisers would be extended in the following year. The very abnormal and protracted *vuli* rains, however, seriously hindered the preparation of the land for the 1952 crop and for this reason not only is this crop expected to be a very small one but little attention was spared for experimental applications of fertilisers.

A pest of rice, hitherto not known to cause serious damage in Zanzibar, destroyed many acres of rice in the seedling stage this year by cutting the hypocotyles just below ground level. It was later identified as *Heterorhynchus andersoni* and arrangements are in hand for experiments on its control next season.

The minor cereal crops of maize, sorghum and bullrush millet were excellent but their cultivation, being mainly confined to small plots on the coral rag areas, provides only for the inhabitants of these areas and little is available for the other parts of the Protectorate.

Root crop planting was subject to planting orders issued under Defence Regulations and a good acreage was achieved in both islands.

The following table, showing the quantities and values of foodstuffs passing through the main market of Zanzibar town, indicates the food production position compared with the previous year:—

	1950	1951
Vegetables, baskets	60,350 ...	80,942
Vegetables, value in Shillings	245,706 ...	365,269
Average price per basket	Shs.4/07	Shs.4/51
Fruit, Baskets	127,647 ...	128,877
Fruit, value in Shillings	540,972 ...	674,606
Average price per basket	Shs.4/24 ...	Shs.5/23
Staple Starchy foods, baskets	108,469 ...	159,067
Staple Starchy foods, value in Shillings	893,011 ...	1,714,349
Average price per basket	Shs.8/23 ...	Shs.10/78

These figures show clearly that production of vegetables and staple foods was greatly increased but fruit, coming mostly from permanent or semi-permanent trees, remained at much the same level. Prices for all kinds of foodstuffs were well above those of last year; on the average by about 22 per cent, a serious burden on the cost of living.

6. Animal Husbandry

Importations of animals into the Protectorate, compared with previous years, are shown on the following table:—

	1947	1948	1949	1950	1951
Oxen	2,370	1,954	2,250	3,121	3,750
Cows	262	157	191	163	151
Calves	99	76	56	36	3
Goats	11,669	10,432	10,717	12,509	13,771
Sheep	1,664	1,304	1,650	1,964	2,370
Donkeys ...	101	44	90	103	80
Horses	3	1	–	–	1
Mules	–	–	1	–	–

The steady increase in the consumption of meat is well indicated by the increase in the number of oxen, goats and sheep imported. The following tables show the numbers of animals slaughtered in the Zanzibar abattoir and in the rest of the Protectorate:—

Zanzibar Abattoir

	Oxen	*Cows*	*Calves*	*Goats*	*Sheep*	*Pigs*
Local stock ...	44	125	31	2,446	–	211
Imported stock ...	2,761	14	–	10,126	2,255	–
Total ...	2,805	139	31	12,572	2,255	211
1950 Total ...	2,728	68	64	13,331	2,100	257

Pemba and Zanzibar Rural Areas

(Cattle only and figures incomplete)

	1950	1951
Pemba rural areas	1,083	867
Pemba townships	1,107	931
Zanzibar rural areas	409	524
Total ...	2,599	2,322

Some 1,011 cattle, 1,174 goats and 443 sheep were imported into Pemba for slaughter purposes. These numbers, far in excess of previous years, are directly attributable to the increased spending power due to the bumper clove crop. In anticipation of a continuance of relatively large numbers of cattle being imported into Pemba, work has commenced in the construction of a quarantine station near Wete. This will greatly relieve the grazing pressure on the limited area at the Zanzibar quarantine station. As was the case last year, peasant cattle owners in Pemba were unwilling to part with slaughter stock at economic prices and only 787 local cattle went to the recognised butchers. Prices in Pemba were very high, cattle changing hands at times for as much as £50 per head.

A census of the Protectorate livestock was conducted and gave the following totals:—

Bovines

Zanzibar Island	...	9,666
Pemba Island	...	23,307

Previous figures were for Zanzibar (1949) 6,640, and Pemba (1947) 21,028.

Goats and Donkeys

	1951	1938
Zanzibar goats	11,392	11,025
Pemba goats	2,345	2,906
Zanzibar donkeys	842	1,022
Pemba donkeys	481	1,380

The goat population apparently is declining slightly and the increase of motor traffic and metalled roads during the last decade has resulted in a much regretted fall in the numbers of the traditional white Muscat donkeys.

Except for three sporadic outbreaks of anthrax, no epidemics occurred during the year. In all, only four animals died from anthrax but attempts to immunise all cattle in the affected area led to civil disturbances and finally to a riot. The owners of commercial dairy herds made no difficulties but peasant cattle owners objected to having their animals inoculated. After the civil disturbances had come to their unhappy climax no further trouble occurred and the immunisation of all the necessary cattle was completed without hindrance. A commission of inquiry into the riot subsequently published its findings and fully supported the course of action taken by the veterinary authorities.

As in previous years, a mobile veterinary unit has been on the road daily examining and treating rural cattle, particularly for trypanosomiasis. Antrycide methyl sulphate continued to give excellent results and this service is becoming increasingly popular and valued by all cattle owners.

There has been little change in the situation as regards East Coast fever which takes a heavy toll of calves in both islands. Dipping of the large commercial dairy herds near Zanzibar town and of rural cattle in two districts of Pemba continued smoothly but there was no change in the attitude of peasant cattle owners in Zanzibar, who are generally quite unprepared to dip their animals. At the end of the year a survey of calf mortality was commenced in Pemba with a view to obtaining more factual information as to the incidence and severity of East Coast fever in that island. The total numbers of privately owned cattle dipped (at weekly intervals in most cases) was as follows:—

	1951	1950
Mpigaduri	7,284	7,594
Mtoni Dairies	38,719	35,240
Mazizini	31,961	37,757
Kombeni	61	480
Hanyegwa Mchana	–	80
Ole, Pemba	6,728	8,901
Vitongoji, Pemba	11,123	9,371
Konde, Pemba	3,282	4,370

The hides and skins drying shed in Zanzibar was enlarged and, in general, the improvement recently attained with this produce was maintained. Prices fell towards the end of the year from Shs. 200/- to Shs. 110/- per frasila (35 lb.). In Pemba the popularity of suspension drying increased and a new shed was opened at Chake in August.

During the year the following numbers of hides and skins were suspension dried:—

	Hides	*Skins*
Zanzibar from slaughter house ...	2,981	14,593
Zanzibar from rural areas ...	763	3,245
Wete, Pemba	504	506
Konde, Pemba	155	52
Ole, Pemba	120	35
Chake, Pemba	130	157

These figures represent increases of 15 per cent and 5 per cent respectively for hides and skins over 1950. The total value of exported hides and skins for the year was £13,141 compared with £10,340 last year.

SECTION B. THE WORK OF THE DEPARTMENT OF AGRICULTURE

1. Staff

The Director went on leave on 1st November, and the Senior Agricultural Officer, Mr. G. E. Tidbury, took charge of the Department assisted by Mr. G. W. Anderson who had been in charge of Pemba District until October. Mr. G. D. Wilkinson took charge of Pemba District in October, having previously undertaken a special survey of the clove areas and the extent of "sudden death" disease of cloves in northern Zanzibar.

Zanzibar Island is divided into two districts, the western and northern area having been in the charge of Mr. R. G. Brett, until July and then of Mr. D. W. Winter. Mr. Brett's contract came to an end in July. The southern and eastern area of Zanzibar, the coral-rag areas, together with Hanyegwa Mchana Experimental Sub-Station, were in the charge of Mr. K. A. Bowden throughout the year.

Mr. J. C. Alley, Veterinary Officer, returned from leave in February and relieved Mr. Fazal Din Ahmedi who had temporarily taken charge of the section. Mr. Ahmed Rashid returned from his studies at Edinburgh in November and was appointed a Veterinary Officer in His Highness's Zanzibar Service.

The post of Government Chemist remained vacant throughout the year, Mr. A. K. Briant, performing the duties of the post in addition to his own. Mr. I. G. C. Squire, Manager of Plantations, returned from his secondment to Clove Control on 1st February, and temporarily relieved Sk. Said Hamed Mauli, who had taken charge of the Government Plantations in Mr. Squire's absence. Mr. A. C. E. Callan, Inspector of Produce was on duty throughout the year.

The Kizimbani Station remained in the charge of Mr. J. Barrett, D.F.C. The Forest Officer, Mr. T. A. Couppis, was appointed on agreement in June. At the beginning of the year the Head Clerk, Mr. L. Paul, was appointed to a Staff Post in the Department.

Mr. A. Lenard, temporary Agricultural Development Officer, ended his work in the Department on 31st January, 1951.

2. The Development Programme

1951 was the sixth year of the Ten-Year Development Programme and, now that half of this period is over, it is perhaps useful to review the progress that has been made so far with the several projects undertaken by the Department.

A. Crop Development Programme

(i) Crops other than Cloves and Coconuts

It is significant that the construction of capital works on the various sub-experimental stations and demonstration plots was finally completed early this year. The devotion of much time and energy by the staff of the Department to building work has of necessity reduced the attention that could be given to agronomic work with crops for half the period of the pro-

gramme. It is also necessary to record that, so greatly have wages and cost of materials risen that, from this year, it is necessary to cut down the activities of the Development stations if they are to be kept going until 1956. Thus no sooner had the construction work been completed then it has become necessary to reduce somewhat the usefulness of these stations. Nevertheless, excellent use has been made of them this year and most valuable investigations into and demonstrations of the "Development" crops has been made in all parts of the Protectorate.

Permanent Crops

Cocoa continued to take first place amongst the "Development" crops. Some 12,227 cocoa plants were planted in Government Plantations during the main rains and some 21,577 issued free to private planters. It must still be recorded that, apart from a few progressive farmers, very little interest is taken in this crop.

Experience is showing ever more clearly the essential need for shade and windbreaks, especially the latter, in cocoa areas. Very considerable numbers of shade trees, mostly *Cassia siamea* and *Peltophorum ferrugineum* were again planted out this year and, by the end of the year, benefit was being derived from the shade trees established last year. Coco-yams appear to provide the best shelter for newly established cocoa.

In order to study the growth of cocoa under true forest conditions, acre plots were prepared in the forests at Dole and Kidichi by removing some of the undergrowth and cocoa was planted without disturbing the larger forest trees which provide the overhead shade. Establishment particularly at Kidichi, has been very good.

Insect pest problems remained unchanged although in Pemba damage was observed on cocoa pods for the first time caused by *Theraptus sp.*, normally a pest of young coconuts. Damage by *Heliopeltis* sp. is much less serious as soon as shade conditions are established.

Further and much larger samples of locally prepared cocoa were sent to the Colonial Products Advisory Bureau and thence to well known cocoa brokers and manufacturers. Most encouraging reports were received on these samples, as follows:—

> "Firm A. The criollo parcel would undoubtedly come into the class of fancy cocoas and would command a substantial premium over base cocoas.
>
> Firm B. We find the criollo sample to be very well prepared and of a full typical flavour. I think every encouragement should be given to the planters in this area and I feel sure that they have in their stands most excellent planting material.
>
> Firm C. The beans were 100 per cent criollo, well fermented and free from any defectives".

In conclusion the Bureau report states:—"You will gather from these comments that there should be a ready market for bulk supplies of Zanzibar cocoa. We hope that serious attempts are being made in Zanzibar to produce supplies of cocoa, and should be glad to be kept informed of developments".

Fruit as a "development crop" has now become of sufficient importance to merit the approval of two further Colonial Development and Welfare projects. One, to develop the citrus fruit industry particularly the production of lime oil, has been commenced during the year and is fully described later in this report. The second, to construct a pineapple canning factory, has been approved in principle and detailed estimates were recently submitted to the Colonial Office.

Oranges are very sensitive to water logging. In the orchard at Kizimbani more than half of a splendid crop of 175,000 oranges on 322 trees fell from the trees half-ripe after several days of exceptionally heavy rainfall when the soil became badly water-logged.

The usual issue of budded citrus and other planting material was made to the public from the Kizimbani nursery.

Kapok is becoming a crop of increasing importance. A block of dwarf kapok from Kenya was established at Kizimbani and another introduction from Trinidad was planted at Hanyegwa Mchana. The areas of Government Plantations planted to a local kapok selection continue to make good progress.

Coffee.—Higher local prices and a greater demand for coffee have increased interest in this crop and some 3,735 seedlings of Liberian and 545 of robusta coffee were distributed from departmental nurseries. A livelier interest is being taken in Pemba in this crop, the only crop other than cloves and coconuts which arouses much interest in that island. Growth of Nganda type robusta seedlings, imported last year from Uganda, is promising.

Ylang-ylang oil prospects have re-aroused interest in this crop. The tree grows remarkably well in Zanzibar and a block planted at Kizimbani in 1949 is now producing flowers in useful quantities. The trees have been topped at five feet and the subsequent lateral growth has been most pronounced. Trial distillations have been made on a small scale and it is hoped to extend the areas under this crop next year.

Other Cash Crops

Derris growers are increasing in number and more interest is being taken in this crop. Some forty-three cultivators took advantage of the free issue of rooted cuttings from Departmental nurseries and 175,000 rooted cuttings were planted out. There is a considerable demand for derris root in overseas markets and the prices are good. The Clove Growers' Association receives, packs and exports all derris, paying a fifty cents per lb. advance to growers and the balance after the sale and accounts have been completed.

At Kizimbani a simple trial was conducted using the proprietory, hormone-like rooting substance "Seradix". Although this experiment was not replicated, it was clear that "Seradix", particularly in its strongest form B.3, greatly increased the percentage of "takes" when derris is planted directly into the field instead of planting first in a nursery for the cuttings to strike root. The best results were observed after allowing the cuttings to wilt for some hours before planting out. It is clear that a considerable reduction in the cost and trouble of establishing derris could be made if cuttings can be planted direct to the field. Extended and more comprehensive trials will be made in the next wet season.

Chillies.—Over 300,000 free seedlings of chillies were again issued from Departmental nurseries and this service, combined with a remunerative market price, has enabled chilli cultivators markedly to increase production. Although the average yield of this crop is about 600 lb. per acre, yields at Hanyegwa Mchana station this year reached 1,060 lb. per acre. The guaranteed minimum price offered by the Clove Growers' Association remained at Shs. 120/- per cental throughout the year although prices in the open market were sometimes twice as great. It will therefore be appreciated that this crop, which is usually picked by family labour, is a very valuable one indeed for small holders in the coral areas.

A manurial and spacing experiment was planted at Hanyegwa Mchana.

Tobacco.—Imported varieties, Nyasaland Western Heavy, Burley Stand Upright and Burley Harranova were again tested at Hanyegwa Mchana. There was little to choose between these three types and, since there appears to be no more ready market for imported varieties than for local tobacco, no further variety trials will be made at present.

Jute Substitutes.—A trial block of *Urena lobata* at Kizimbani yielded at the rate of 885 lb. of retted fibre per acre and a sample was sent to the Colonial Products Advisory Bureau. The report of the British Jute Trade Research Association, to whom the Colonial Products Advisory Bureau forwarded the sample, contained the following remarks:—

> "The coarseness of the fibre near the root and its harsh feel suggests that the plants may have been over matured when they were harvested. In view of the fact that *Urena lobata* is more similar to jute in its characteristics than most of the stem fibres examined at the Bureau, it would seem worth while carrying out further growing trials provided the preparation of the fibre can be improved and provided there is reasonable chance that the cultivation of *Urena* in Zanzibar would be a commercial possibility".

Investigations with this crop continue.

The plot of Ramie made very little progress and the plants were transplanted to a more favourable site. There appears to be very little hope, however, that Ramie will ever prove a success.

Cotton.—Seeds of improved varieties of cotton were received from the Empire Cotton Growing Corporation in Uganda and both a variety trial and a spacing plus fertiliser trial were laid down at Hanyegwa Mchana. In the variety trial vars. U4/5143, MU8 ex Barberton, and MU8 × BP522 A618 were outstanding and yielded over 400 lb. per acre without fertilisers and over 600 lb. per acre with a dressing of 1½ cwt. per acre each of sulphates of ammonia and potash. Both yields are of seed cotton.

In the fertiliser and spacing trial the average yield was 404 lb. per acre of seed cotton, the best combination in the experiment—plants at 3′ × 1′ and dressed with 3 cwt. per acre each of ammonia and potash—yielded 1,000 lb. of seed cotton per acre. Potash, as is often the case on *uwanda* soil, caused very significant increase in yield.

Cotton was also tried on the actual coral rag and grew very well exhibiting none of the blemishes caused by the leaf and stem diseases which were fairly wide spread on the *uwanda* plains. Unfortunately, 100 per cent

of the bolls produced on the coral rag were stripped from the plants by monkeys. There appears, however, to be every reason for continuing trials with this crop as a possible further cash crop for coral country dwellers.

Sunflowers were again planted at Hanyegwa Mchana but yielded poorly. This crop responded significantly to nitrogenous fertiliser but, on the whole, is not likely to prove a valuable addition to the cash crops of the Protectorate.

Annual Food Crops

Rice.—Seven fertiliser trials were conducted on various soil types further to establish the reliability of the general recommendation of a dressing of two cwt. per acre of superphosphate plus one cwt. per acre of sulphate of ammonia for the chief rice areas of the Protectorate. The results of these trials are reported in full in the Supplement to this Report. An extension of the series of rice fertiliser trials this year was to conduct a further three on transplanted rice. In these the recommended level of dressings held as good as for the seedling rice.

The peasant rice cultivators who purchased small quantities of fertiliser for trial on their own land were very satisfied by the results, and, had normal conditions prevailed when rice cultivations commenced at the end of the year, it is thought that larger numbers would have taken fertilisers for the coming season.

Variety trials were also conducted at the main stations but no results of particular interest emerged.

Maize at Hanyegwa Mchana was the subject of a trial of trace elements but no significant differences due to minor elements were observed. Nitrogen and potash caused significant increases in yield in a fertiliser trial of maize on *kinongo* soil at Makunduchi.

Sorghum on *kinongo* soil at Mkwajuni, on the other hand, responded to nitrogen and not to potash. This difference in response to potash on what are thought to be similar soils has been observed before and will need careful elucidation in future experiments.

Cassava hybrids received from the East African Agriculture and Forestry Research Organisation, which resulted from crosses of cassava with *M. glaziovii*, *M. dichotoma* and tree cassava, were reaped after one year and yielded most impressively. As only a very few cuttings had been received from Amani it is not possible to calculate accurate yields per acre but several clones yielded approximately at the rate of 15 to 20 tons per acre and most of them appeared to be resistant to mosaic. Some of the heaviest bearers are bitter cassavas and would be unacceptable to Zanzibar growers but several were very palatable. All the varieties have been replanted using all the available material as cuttings in order to produce enough material for planting a variety trial next year.

Variety trials were also undertaken with sweet potatoes and yams at various stations, the latter crop being a most valuable one for the coral areas where yields are very heavy if the planting holes are liberally supplied with compost. Demonstration plantings with and without compost were made at Makunduchi.

Sim-sim.—Two variety trials were conducted using varieties imported from the mainland, but this crop is a very chancy one unless exactly the right conditions prevail. Both varieties gave unsatisfactory yields.

Vegetable growing was again demonstrated at Kibonde Mzungu where irrigation facilities have been provided and where local vegetable producers have been encouraged to lease half-acre plots. A great deal of further information about vegetable culture was obtained but little interest was taken in vegetable growing, and the private growers much preferred to plant rice, for which the irrigated plots are very suitable. The encouragement of vegetable growing has therefore proved to be a failure and it has been decided not to continue demonstrations on the same scale next year.

Certain varieties of vegetables imported from Australia for the first time this year gave excellent results, notably a lettuce, Imperial 847.

(ii) Clove Regeneration

The following numbers of clove seedlings were issued from Departmental nurseries this year:—

	Zanzibar	*Pemba*	*Total*
Sold	36,792	38,515	75,307
Issued free	46,347	7,537	53,884
Total ...	83,139	46,052	129,191

Since the price of cloves has risen so high and with a bumper crop last season, the demand for clove seedlings was very great and supplies were wholly taken up. The free seedlings issued were provided partly from funds contributed by the Clove Growers' Association and partly from a Development Scheme grant. The seedlings produced for a sale were sold at 5 cts. each but the cost of production, borne by Protectorate funds, was approximately 38 cts. each seedling.

(iii) Copra Production

From funds provided by the Copra Cess Board, coconut seedlings were grown in public nurseries and sold at below cost of production. The year's figures for distribution were:—

Zanzibar	171,260
Pemba	29,045
Total ...	200,395

This total represents a very considerable increase over last year's supplies but, so great was the demand, only a relatively small proportion of the number applied for could be allocated to each planter. As the Copra Cess Board ceased to exist at the end of 1950 and the Copra Board which should have taken its place had not yet been formed, no provision was made for 1952 distribution and the coconut nurseries were not planted up again.

Also from the Copra Cess Fund a service was maintained by which trained masons were provided free to those who wished to repair old copra kilns or build new ones. Supplies of kiln building material were sold to kiln builders at cost price. Some 20 kilns in Pemba and 59 in Zanzibar were built or repaired with assistance from this source.

Instruction in copra making and advice to copra makers was given by Departmental inspectors in both islands.

(iv) Afforestation Survey, Anti-erosion and Utilisation of Uwanda Areas

The appointment of a Forest Officer early in the year has enabled more progress to be made in these activities. At Hanyegwa Mchana the continued healthy growth of at least half a dozen species of forest trees leaves no doubt that the smaller *uwanda* areas can be best utilised by afforestation. A further area of about 50 acres of *uwanda* at Jendele was taken over by the Department for afforestation and a grant made for this purpose. Preparations for planting about 22,000 trees next long rains were commenced this year.

On the open *uwanda* plains, where tsetse incidence should be less difficult to control, the best method of utilisation appears to be by controlled grazing of the Heteropogon sward for beef production. A grant for a pilot scheme at Hanyegwa Mchana has now been made and the progress of this scheme is reported below on page 19.

B. Crop Research

Clove Research.—The Clove Research Scheme continued its investigations into the fungal pathogens of the clove. The causal organism of "die-back" *Cryptosporella* sp. produces a discolouration of the invaded tissues which renders pruning and the excavation of diseased tissues from the trunk and limbs relatively easy. Considerable time has been devoted to developing a technique to cut out this fungus from infected trees and protect the wounds by painting with white lead paint.

Experiments are also in progress with the fungus, *Valsa* sp., which is suspected of being responsible for "sudden death". No definite proof of this has yet been obtained.

Entomological studies continued on all aspects of the gumming disease of coconuts which is caused by the recently observed insect pest, *Theraptus* sp. Experiments have already shown that yields of coconuts are greatly increased by applications of insecticide to the palms but much remains to be done before a simple and economic method of control can be recommended.

C. Stock Development

(i) Survey of Cattle Diseases and Disease Control

Mr. D. L. Johns, a research officer posted in Zanzibar by the East African Tsetse and Trypanosomiasis Research and Reclamation Organisation, submitted his full report on his recent work in the Protectorate. This concerns the life history and habits of *Glossina austeni*, the local vector of trypanosomiasis. The substance of Mr. John's findings was reported in last year's Departmental Annual Report. A further visit was paid by Mr. Johns and Mr. Forde of the East African Tsetse and Trypanosomiasis Research and Reclamation Organisation when consideration was given to proposals for an attempt to eradicate the fly in part of the plantation areas of the island. The Mwera area has been suggested as a suitable district and, at the end of the year, a grant of £2,500 from Colonial Development and Welfare Funds was made for this purpose. The grant will enable a year's

survey to be undertaken in which the breeding and resting places of the fly will be sought out, mapped, and eradicated. At the same time all animals within the area will be examined for trypanosomes, and any cases of disease will be treated with antrycide, recorded, and studied in relation to the recorded incidence of the fly. This survey is due to commence in July, 1952.

Meanwhile, the mobile trypanosomiasis unit of the Veterinary section of the Department continued to pay weekly visits to all rural areas of Zanzibar island to treat cattle for trypanosomiasis by giving free injections of antrycide methyl sulphate. In all, 3,941 animals were examined and 614 found positive and treated. Antrycide continues to give excellent results and the service is most popular with cattle owners.

There has been no change in the position as regards East Coast Fever. Dipping continues in three Pemba districts albeit with some reluctance on the part of cattle owners, while in Zanzibar only cattle belonging to commercial dairy herds are regularly dipped.

(ii) Development of Cattle Industry

The Kizimbani herd increased to an average of 238 head carried throughout the year and, although the year was an exceptionally healthy one as regards disease, some loss of condition was observed and thought to be due to overstocking. This showed itself particularly with weaner calves and a sharp increase in helminthic infection necessitated a return to the regular use of phenothiazine, a drug which has been suspected last year of causing nephritis. At the end of the year it was decided to transfer at least 100 head of young stock to the farm at Hanyegwa Mchana to relieve the overstocking at Kizimbani.

The culling standard was again raised and now stands at 2,000 lb. in either the first or second lactation (305 days maximum). The average milk yield in 305 days rose to 1,836 lb. and the daily milk index figure expressed in pounds per cow in milk averaged 7.6 lb., a figure well above that of previous years. There are now clear indications that ten years of selection and breeding are giving good results and a very useful strain of pure Zebu local animals has been established.

It is of interest to observe that experience with the Kizimbani herd indicates that the milk yield of native cattle is more sensitive to carbohydrate intake than the quantity of proteins fed whereas shortage of the latter mainly affects the butter fat content of the milk.

(iii) Pasture Improvement

The most outstanding developments in this field have concerned the management of the *Heteropogon contortus* sward on the coral *uwanda* as a result of which a new Development Scheme, reported below on page 19 has been launched.

Experiments with hormone-type herbicides have been continued and it is now possible to destroy the hitherto very resistent weeds *Oldenlandia bojeri* and *Stachytarpheta* spp. The newer herbicide 2, 4 5—T has proved particularly effective against woody weeds and the more recent preparations of 2,4—D are also proving very useful. One proprietary preparation, Dicotox, gave good results.

There is little more to report as regards other grasses. Further areas at Kizimbani were planted to *Stenotaphram dimidiatum* and work continues on this and other species especially with a view to quick and inexpensive methods of establishing pasture.

Tropical Kudzu (*P. phaseoloides*) still remains the stand-by as a cut fodder at Kizimbani particularly in the dry season. It is a most valuable crop for a long ley.

D. Education

The *Agricultural Training Course* for "Young Farmers" was again held at Kizimbani. Ten young men from the rural areas and two primary school teachers attended the course. Two young farmers failed to complete the course. At the end of the year a comprehensive enquiry was made, with the aid of Administration, into the subsequent careers of those who had taken this course in earlier years. It was clear from the results of this enquiry that very few indeed had benefitted from their year at Kizimbani, many having taken up employment in spheres remote from agriculture. The course has now been discontinued pending a decision from the Secretary of State as to the best means of employing the remaining funds.

As in previous years the Kizimbani School undertook the training of recruits to the Department's junior staff and also provided theoretical and practical instruction in elementary crop and animal husbandry for the boys of the Khalifa Rural Middle School.

E. Fisheries Development in Zanzibar and Pemba

Considerable progress has been made in the building of the 65 ft. fisheries vessel. This ship, named by His Highness "Annajah", was launched on 31st December, 1951. Fitting out and the installation of machinery will occupy the major part of 1952.

The salt water fish ponds at Chukwani were emptied for the first time in January, 1951, eight months after stocking which had been done by allowing the fish fry to enter freely at flood tides. This method was found to be unsuitable, however, as the fry of predacious fish such as barracuda and rock cod were also free to enter and subsequently devoured the vast majority of the mullet and milk fish being farmed. Subsequently stocking in early 1951 was done by hand, the fish fry being caught outside the ponds, and the water entering the ponds at high tides was made to pass through $\frac{1}{2}$" wire mesh screens.

At the end of the year the ponds were again emptied and predatory fish were again found to be present albeit in small numbers. It is apparently not possible to keep them out, their fry passing even the fine screens used. Moreover the cost of hand stocking had proved very considerable indeed. As a result, the marine fish farm project has been abandoned as economically quite unsound.

The fresh water fish farm at Kibonde Mzungu was stocked with *Tilapia mosambica* and *Tilapia nilotica* in September, 1950, the latter species being very kindly supplied from Tanganyika. Harvesting the ponds in April showed that *T. nilotica* had increased from 3 to 13 cms. in length in six months and now weighed $1\frac{1}{4}$ ozs. *T. mosambica* had increased from 7 to 19 cms. and weighed on the average $3\frac{1}{4}$ ozs. The Fishery Officer is of the view that fresh-water fish of this type would only be acceptable on the local

market if a weight of ¼ to ½ lb. could be achieved. The ponds have been re-flooded and the water treated with sulphate of ammonia. This project will be taken to its conclusion but it is not considered at all likely that fish farming would ever prove to be an economic success in Zanzibar.

From January to December, a daily record of all fish landed was maintained at ten important landing beaches around Zanzibar Island and data collected of fishermen and fishing craft in use. For the twelve months it has been estimated that 4,208,000 lb. of fish valued at £126,000 were caught. The peak landings were in March and April when calm seas and light breezes prevail during the change from the North-East to the South-West Monsoon. Some 4,975 fishermen, 969 outrigger canoes, 324 dugout canoes and 168 other craft were recorded.

F. Development of Forest Resources

The Forest Officer was appointed in June and has been occupied mainly with the establishment of forests at Walezo-Chumbuni and Kichwele-Pangeni for which prison labour is being employed. He has also commenced a survey of the present position in the mangrove forests of the Protectorate which are still slowly recovering from war-time exploitation. The Forest Officer has not yet commenced work either in the Jozani Forest in Zanzibar or on the Masingini catchment area both of which activities are provided for in this Development Scheme and which will be a major part of next year's programme. Also under this scheme, a Makerere-trained Assistant Agricultural Officer has been receiving further training at the Pakistan Forestry School during the year.

At Walezo-Chumbuni the afforestation of an area of badly eroded and extremely infertile land proceeds slowly and without great promise although *Eucalyptus sp.* is growing fairly well in some of the valleys and *Casuarina* is not unsatisfactory on the more fertile hillsides. Some 18,000 tree sites were planted this year.

Kichwele-Pangeni is a much larger and much less infertile area of poor Government land. A Prison Camp and a plant nursery have been established there and a high proportion of the available convict labour was employed in building and laying out the camp. However, some 76,850 sites were planted over 65 acres. Early growth is much more promising than that observed at Walezo-Chumbuni.

G. New Development Schemes

During the year three new Development Schemes were approved by the Secretary of State, as follows:—

(i) Development of Fruit Industry

In June a grant of £28,562 was made to encourage the development of a citrus fruit industry by the production of free planting material and the payment of planting and maintenance bonuses on 300 acres of oranges, 50 acres each of grapefruit and mandarins and 300 acres of limes, the latter intended to form the basis of a lime oil industry. The planting of some 5,000 improved-type budded mangoes is also provided for. In addition a 20-acre citrus demonstration plot will be planted by Government to show those participating in the scheme the approved manner of planting and maintenance.

In the second half of the year a nursery was established for the production of planting material and some 275,000 rough lemon seeds sown. In the *vuli* rains in November, 110,000 lemon seedlings were planted out into beds for budding in 1952. Distribution of the first budded plants will take place in 1953.

The initial preparations of the demonstration plot were commenced and this area will be planted up in 1952. The fact that sufficient budded plants are already available at Kizimbani for this purpose will enable this plot to be planted ahead of the main scheme.

(ii) Development of a Cattle Industry in Uwanda Areas

A grant of £4,600 was made in July for a scheme of raising cattle for beef production on the open *uwanda* plain to the south of the Hanyegwa Mchana Experimental Sub-Station.

This project arose from the results obtained in the original programme described above, which sought an economic use for the open *uwanda* plains which constitute part of eastern and southern Zanzibar and which as far as is known have never served any really useful purpose. Initial experiments at this station indicated that the coarse sward constituted mainly of *Heteropogon contortus* could be made to provide excellent nutritious grazing provided the grass was kept from seeding and becoming dry and wiry which is the natural course of events each year culminating in widespread fires. This dry and dangerous condition of the pasture, together with the high incidence of trypanosomiasis, has been the reason why the *uwanda* plains have never been used before.

Experiments were continued in the walled-in paddock at the station which has been subdivided into three portions to allow for rotational grazing. An attempt is in progress to keep 4 bullocks permanently in this paddock which comprises 14.1 acres of land and at the end of the year the trial had been running for nine months with every indication that this area could permanently support a larger number of animals. Larger herds had to be introduced in wet weather to keep the flush of grass under control and the average number of animals supported represented one animal to 1.8 acres. It is considered that one animal to 3 acres is a more representative figure as the extra animals brought in at times of vigorous growth cannot be supported by the same area in the drier weather. Studies are also being made of changes in the composition of the sward.

Meanwhile, when the new scheme was approved a large area of the *uwanda* outside the station was taken over and the grazing of a mixed herd (mainly of discards from Kizimbani) was controlled by an electric fence. The full extent of this *uwanda* is some 1,500 acres and the scheme provides for the purchase of 100 cows and the maintenance of these and their offspring for five years by which time the scheme, if a success, should be self-supporting. The water supply will be obtained from a well by means of a windmill pump. It is hoped to build up a herd of over 300 head with an annual production of about 70 head of slaughter cattle. If the scheme is a success its extension to other *uwanda* areas will be a means to reduce the Protectorates's dependence on outside sources for its beef supply.

(iii) Tractor Scheme

A grant of £3,500 has been made for the purchase and operation of two agricultural tractors and suitable implements for the purpose of demonstrating mechanical cultivation in Zanzibar and Pemba. The scheme should be self-supporting as charges will be made for the hire of these machines for ploughing rice land, cultivating clove and coconut areas and other operations.

By this means it is hoped to demonstrate to plantation owners a possible means of overcoming the present serious problem of the scarcity and high cost of manual labour. The tractors and implements are on order but have not yet been received.

3. Distribution of Planting Material

As in previous years a major part of the work of the Experiment Stations and Demonstration Plots was the production and distribution of large quantities of planting material. Seedlings and worked plants of economic species are usually sold at well below cost of production, and planting materials, such as seeds and cuttings, of food plants are usually distributed free. A list of the quantities issued this year is shown as an appendix.

4. Government Plantations

This section of the Department which, as far as possible, is run as a commercial unit but which also provides a number of uneconomic public services, showed a profit of £1,000, a not unsatisfactory figure having regard to the small harvests of cloves and coconuts reaped this year and the expenditure of some Shs. 34,153/- on the development of cocoa, pineapple and other areas from which no revenue can yet be expected.

The clove harvest figures for the year, compared with previous years, were as follows (a clove season is from 1st July to 30th June):—

Season	*Green cloves*	*Dry cloves*	*Dry stems*	*Average price Dry cloves*
	lb.	*lb.*	*lb.*	*Shs.*
1951 (six months) ...	11,126	3,502	1,049	398.29
1950-51	180,944	59,572	15,923	145.40
1949-50	281,491	95,601	24,467	83.39
1948-49	48,792	15,951	4,828	68.24
1947-48	11,202	3,691	1,048	47.04
1946-47	273,692	87,032	24,368	52.28

As most of the 1950/51 crop was reaped in 1950 it will be observed how few cloves were produced in 1951. On the other hand the price was most satisfactory.

Comparative figures for the annual coconut harvests are as follows:—

Year	*Nuts gathered*	*Copra made tons*	*Nuts per ton of copra*	*Copra prices realised, per 100 lb. Shs.*
1951 ...	1,846,194	239.47	6,725	59.65
1950 ...	2,815,289	340.78	7,165	47.08
1949 ...	3,081,695	385.26	6,540	37.57
1948 ...	2,143,733	264.44	6,616	33.40
1947 ...	2,261,366	269.50	6,810	24.06

The harvest was 30 per cent below average although prices were somewhat better than previous years.

The cocoa areas of Government plantations were increased by the planting of 12,227 seedlings at Kidichi and Selem.

5. Produce Inspection

After the abnormally large exports last year, the examination of cloves for export in 1951 dropped to the more normal figure of 143,223 bales. The great increase in the price of cloves, however, inevitably led to a marked increase in adulteration, particularly with chopped stems, and the work of the section was notably increased in this direction. As much as one ton of chopped stems was recovered from cloves during examination this year.

The figures for examinations of cloves, clove stems and copra under the Adulteration of Produce Decree are given below. This examination is made immediately before the produce is marketed and a further examination is made when grading prior to export:—

	Cloves in bags		*Failed for*		
Origin	*Total deliveries*	*Passed*	*Excessive moisture*	*Extraneous matter*	*Percentage of failure*
Zanzibar ...	24,379	21,258	2,765	356	13
Pemba ...	183,163	162,816	18,264	2,083	11
Total ...	207,542	184,074	21,029	2,439	11

	Clove Stems in Bags		*Failed for*		
Origin	*Total deliveries*	*Passed*	*Excessive moisture*	*Extraneous matter*	*Percentage of failures*
Zanzibar ...	14,548	14,484	3	61	—
Pemba	95,058	92,210		2,848	3
Total ...	110,606	106,694		2,912	3

	Copra in Bags		*Failed for*		
Origin	*Total deliveries*	*Passed*	*Excessive moisture*	*Extraneous matter*	*Percentage of failure*
Zanzibar	110,530	81,824	28,316	390	26
Pemba	68,908	62,784	5,335	749	9
Total ...	179,438	144,608	33,651	1,139	20

The copra from Pemba is inspected and screened before it is sent to Zanzibar. At this preliminary inspection 3.3% of the copra presented was failed.

Coconut oil is inspected and tested by the Government Chemist prior to export. Some 11,665,998 lb. were inspected this year with comparatively few failures. Some 1,246 bags of chillies, representing 44½ tons, were inspected and passed for export. No mangrove bark was exported this year.

6. Chemical Laboratory.

As in 1950 no Government Chemist has been on the staff and, although Mr. A. K. Briant continued to supervise the laboratory work as far as possible, the activities of the laboratory were confined to routine analyses, no investigational work being undertaken.

Some 1,737 samples were examined of which 1,641 came from Government Departments and the remainder from private sources. Shs. 906/50 was received in fees from the latter, a 23 per cent increase on last year. To this must be added Shs. 14,180.09 received for sampling and testing coconut oil prior to export.

Other examinations included the analyses of cattle dip fluids for arsenic content; mangrove bark for tannin content; regular samples of water from the softening plants of the Power Station; fresh milk suspected of being adulterated; bhang, opium and other police exhibits, and damaged articles in connection with insurance claims.

7. Principal Agricultural Legislation

The following is a list of the more important agricultural legislation promulgated during the year:—

			Date
Decree	No. 11	A Decree to Control the Culling of Seaweed in the Protectorate and its exportation therefrom	9.8.51
Decree	No. 26	A Decree to amend the Control of Seaweed, Decree, 1951	19.12.51
		The principal Decree prohibits the culling of seaweed for sale, etc. without licence and provides for granting culling and export licences and the payment of a royalty on exported seaweed. The amended Decree makes clear certain ambiguous clauses in the Principal Decree.	
Government Notice	No. 50	The Animal Disease Decree, 1948. The Animal Disease (Amendment) Regulations, 1951	1.5.51
		These regulations require imported cattle, other than slaughter cattle, to have passed the Tuberculin Test within one month prior to import.	
„	No. 67	The Animal Disease Decree, 1946. The Animal Disease (Compulsory Dipping Areas) Order, 1951	31.5.51
		This Order provides for compulsory dipping in areas of central and north Pemba.	
„	No. 71	The Clove Growers' Association Decree ...	26.6.51
		Price for Purchase of Cloves. The fixed buying prices offered by the Clove Growers' Association for the season.	
„	No. 95	The Fish Protection Decree, 1948. Fish Protection (Importation Restriction) Rules, 1951	7.8.51
		Prohibits the importation of certain species of live fish and regulates the importation of other kinds of live fresh-water fish.	
„	No. 97	The Labour Decree, 1948 (No. 11 of 1946) ... The Plantation Workers (Clove Picking Contracts) Regulations, 1946. Standard Contract for 1951/52 Season.	10.8.51

Government Notice	No. 156	The Control of Seaweed Decree, 1951. The Seaweed (Royalties) Order, 1951 ... ... Provides for a royalty of Shs. 100/- per ton on exported seaweed.	30.10.51
„	No. 127	The Control of Seaweed Decree, 1951. The Control of Seaweed Decree (Date of Operation) Order, 1951 ... ... This Order brings the Control of Seaweed Decree, 1951, into operation on 1st December, 1951.	1.12.51
„	No. 129	Plant Protection Decree, 1937. The Plant Protection (Importation of Bananas) Order, 1951 ... ... Prohibits the importation of any part of the banana plant other than the fruit in view of the outbreak of Panama Disease in Tanganyika Territory.	15.11.51
„	No. 168	The Interpretation and General Clauses Decree The Control of Seaweed Decree, 1951. This notice deputes the Director of Agriculture and the District Agricultural Officer, Pemba, to issue licences in Zanzibar and Pemba respectively.	1.12.51

A. K. BRIANT,
Director of Agriculture

12th September, 1952

Appendix I

REVENUE AND EXPENDITURE OF GOVERNMENT PLANTATIONS

Revenue

	Kidichi		*Selem*		*Mtoni*		*Chukwani*		*Total*	
	Shs.	Cts.	Shs.	Cts.	Shs.	Cts.	Shs.	Cts.	Shs.	Cts.
Cloves and stems	49,476	84	7,828	06	...	..	...	...	57,304	90
Copra	201,060	13	44,314	35	74,270	28	38,926	08	358,570	84
Coconuts	5,450	25	222	70	3,527	92	1,736	00	10,936	87
Coconut crops leased	420	00	590	00	3,305	00	2,138	00	6,453	00
Miscellaneous	2,977	15	3,509	39	4,560	75	397	40	11,444	65
Leased plantations	...	...	1,200	00	...	...	...	...	1,200	00
Hire of lorry	436	00	132	70	91	70	60	20	720	60
Rent of quarters	495	78	138	80	174	96	136	90	946	44
	260,316	15	57,935	96	85,930	61	43,394	58	447,577	30
Deduct value of produce brought forward	77,951	04	10,731	05	19,743	57	9,835	97	118,261	63
	182,365	11	47,204	91	66,187	04	33,558	61	329,315	67
Add value of produce taken forward	12,466	06	96	42	11,196	11	6,986	40	30,744	99
Total Revenue	194,831	17	47,301	33	77,383	15	40,545	01	360,060	66

Expenditure

Personal Emoluments.

	Kidichi		*Selem*		*Mtoni*		*Chukwani*		*Total*	
	Shs.	Cts.	Shs.	Cts.	Shs.	Cts.	Shs.	Cts.	Shs.	Cts
Headquarters Staff	11,193	12	5,596	56	3,357	94	2,258	62	22,386	24
Field Staff	13,758	13	6,692	67	5,156	83	2,906	50	28,514	13
Total	24,951	25	12,289	23	8,514	77	5,145	12	50,900	37
Other charges										
Transport expenses	2,372	69	1,177	19	811	32	531	29	4,892	49
Materials and tools	868	77	497	66	273	13	263	16	1,902	72
Labour	137,813	60	49,388	95	39,409	63	38,679	12	265,290	40
Repairs to buildings	6,493	34	1,880	21	2,706	80	972	52	12,052	87
Maintenance of lorry	2,997	68	915	00	660	00	455	00	5,027	68
Total personal emoluments and other charges	175,497	33	66,147	34	52,375	65	46,046	21	340,066	53
Profit	19,333	84	...	...	25,007	50	...	...	44,341	34
Loss	...	...	18,846	01	...	...	5,501	20	24,347	21
						Net profit			19,994	13

Appendix II

DISTRIBUTION OF PLANTING MATERIAL

Avocado pear, grafted	...	Nos.	6
Avocado pear, seedlings	...	,,	34
Banana, suckers	...	,,	890
Breadfruit, rooted cuttings	...	,,	163
Carambola, seedlings	...	,,	16
Cassava, cuttings	...	,,	58,000
Chillie, seedlings	...	,,	307,149
Clove, seedlings	...	,,	129,191
Cocoa, seedlings	...	,,	21,577
Coconut, seedlings (Copra Cess Fund)	...	,,	200,305
Coffee, seedlings	...	,,	4,280
Derris, rooted cuttings	...	,,	174,971
Durian, seedlings	...	,,	19
Fig, rooted cuttings	...	,,	2
Gram, seed	...	lb.	120
Grapefruit, budded	...	Nos.	902
Groundnuts, seed	...	lb.	96
Guava, seedlings	...	Nos.	25
Guava, Chinese, seedlings	...	,,	2
Jackfruit, seedlings	...	,,	11
Kapok, seedlings	...	,,	1,550
Kudzu, tropical seed	...	lb.	210
Lemon, smooth, budded	...	,,	77
Lime, budded	...	Nos.	177
Lime, sweet, budded	...	,,	170
Litchi, marcotts	...	,,	40
Maize, seed	...	lb.	300
Malaya apple, seedlings	...	,,	217
Mandarin, budded	...	,,	62
Mango, grafted	...	,,	12
Mango, seedlings	...	Nos.	137

DISTRIBUTION OF PLANTING MATERIAL — *(Contd.)*

Nutmeg, seedlings	...	Nos.	118
Oranges, budded	...	,,	991
Pawpaw, seedlings	...	,,	200
Pomegranate, seedlings	...	,,	6
Pineapple, suckers	...	,,	7,150
Pomelo, budded	...	,,	140
Rambutan, seedlings	...	,,	349
Rice, seedlings	...	,,	30,000
Rice, seed	...	lb.	4,970
Sapodilla, marcotts	...	Nos.	6
Sapodilla, seedlings	...	,,	184
Sorghum, seed	...	lb.	11
Soursop, seedlings	...	Nos.	10
Sunflower, seed	...	lb.	15
Sweet potato, cuttings	...	Nos.	28,300
Wax Jambu, seedlings	...	,,	21
Yams	...	lb.	1,262

Appendix III

DOMESTIC EXPORTS, 1951

Items	*Unit of Quantity*	*Quantity*	*Value*	*Percentage of Total value*
	Cental		£	
Cloves	of 100 lb.	260,219	4,280,865	80.83
Clove bud and stem oil	lb.	316,636	155,682	2.96
Copra	ton.	25	1,931	0.04
Coconuts	cwt.	270	457	0.01
Oil cake	cwt.	64,286	92,724	1.75
Soap, common and toilet	cwt.	4,693	19,884	0.38
Coconut oil	cwt.	101,964	633,866	11.99
Mangrove bark	ton.	...	...	...
Chillies	cwt.	891	12,133	0.23
Fruit, fresh	cwt.	14,968	6,599	0.12
Bêche-de-mer	cwt.	397	1,137	0.02
Tobacco, unmanufactured	lb.	10,557	276	0.01
Ox hides	cwt.	781	10,268	0.19
Skins, sheep and goat	cwt.	159	2,873	0.05
Livestock	No.	2	3	...
Forest products	value	...	2,086	0.04
Kapok	cwt.	597	11,024	0.21
Fibres, manufactured	ton.	1,704	9,617	0.18
Shells, marine	cwt.	4,452	18,738	0.36
Fish, dried or salted	cwt.	78	724	0.02
Fish, fresh	cwt.	42	143	...
Lime	cwt.	34,268	3,840	0.02
Other unclassified natural products		...	...	...
Other articles		...	31,281	0.59
			5,296,151	100.00

Appendix IV

APPROXIMATE PRODUCTION OF CLOVES IN FRASILAS OF 35 lb. FOR 35 CROP YEARS

(1st July to 30th June)

(Based on receipts of cloves at the Central Market and C.G.A.)

Season	*Zanzibar Frasilas*	*Pemba Frasilas*	*Total Frasilas*	*Mean crop per season in 5 year periods Frasilas*
1916/17	208,716	302,919	511,635	...
1917/18	63,958	234,239	298,197	...
1918/19	259,273	565,229	824,502	...
1919/20	93,847	168,703	262,550	...
1920/21	231,831	316,446	548,277	489,032
1921/22	65,819	200,983	266,802	440,065
1922/23	291,417	690,498	981,915	576,809
1923/24	75,027	236,767	311,794	474,267
1924/25	240,952	520,490	761,442	574,046
1925/26	219,192	392,622	611,814	586,753
1926/27	203,843	529,186	733,029	679,998
1927/28	190,370	500,382	690,752	621,766
1928/29	74,828	125,740	200,568	599,521
1929/30	318,647	610,296	928,943	633,021
1930/31	51,796	201,320	253,116	561,281
1931/32	175,070	760,786	935,856	601,847
1932/33	242,772	244,594	487,366	561,169
1933/34	146,098	781,090	927,188	706,493
1934/35	360,037	503,415	863,452	693,395
1935/36	65,938	232,571	298,509	702,474
1936/37	45,096	351,568	396,664	592,635
1937/38	446,500	909,416	1,355,916	768,345
1938/39	39,879	115,211	155,090	613,926
1939/40	168,041	501,474	669,515	575,139
1940/41	146,323	575,277	721,600	659,757
1941/42	297,578	889,550	1,187,128	817,849
1942/43	40,049	223,691	263,740	599,414
1943/44	263,423	777,218	1,040,641	776,524
1944/45	200,417	459,396	659,813	774,584
1945/46	26,493	161,075	187,568	647,778
1946/47	170,280	924,329	1,094,609	649,074
1947/48	30,914	280,986	311,900	658,906
1948/49	81,700	310,971	392,671	529,312
1949/50	153,888	430,253	584,141	514,177
1950/51	158,588	1,081,786	1,240,374	724,739
Average for 35 seasons	167,102	460,300	627,402	...

MONTHLY AND ANNUAL RAINFALL TOTALS FOR THE YEAR 1951 FOR STATIONS IN ZANZIBAR AND PEMBA

		Jan.	Feb.	March	April	May	June	July	August	Sept.	October	Nov.	Dec.	Total 1951	Total 1950
Clove Growing Areas :															
Kizimbani	Rain ...	0.77	4.10	2.76	11.16	18.22	3.44	2.36	1.35	1.59	11.11	15.50	17 58	90.14	69.80
	Wet Days ...	5	8	10	27	24	14	11	14	15	23	26	26	203	181
Mkwajuni	Rain ...	0.21	1.53	6.08	8.52	18.87	3.33	2.18	3.80	1.76	3.55	9.47	15.46	74.76	60.47
	Wet Days ...	2	7	12	19	21	8	9	16	8	8	17	23	150	145
Selem	Rain ...	0.24	6.26	3.03	12.14	13.04	2.65	2.97	1.62	2.40	7.62	16.70	16.47	85.14	60.46
	Wet Days ...	3	7	13	19	19	10	11	14	17	19	22	22	176	169
Mkokotoni	Rain ...	...	0.96	6.41	13.66	18.70	3.48	2.98	4.43	4.34	4.79	11.74	15.30	86.79	56.24
	Wet Days ...	...	4	12	18	15	6	8	15	13	12	15	16	134	130
Mwera	Rain ...	1.05	5.96	3.02	7.39	15.60	2.66	1.90	0.60	1.30	12.10	14.00	6.85	72.43	73.54
	Wet Days ...	2	9	5	15	16	6	4	4	2	12	14	13	102	141
Kigomasha	Rain ...	0.05	0.10	5.93	7.06	23.22	2.10	5.87	1.48	2.40	6.84	11.12	7.69	73.86	48.30
	Wet Days ...	2	1	8	20	23	9	13	9	10	17	15	13	140	122
Matangatwani	Rain ...	0.10	1.02	7.60	13.41	24.42	2.61	8.22	1.12	0.66	7.89	15.92	10.58	93.55	73.97
	Wet Days ...	2	4	12	24	24	10	12	10	7	17	19	16	157	164
Wete	Rain ...	0.07	2.06	4.68	11.19	25.73	2.76	7.46	0.85	0.48	7.37	20.05	15.57	98.27	70.32
	Wet Days ...	2	5	12	22	25	12	16	11	7	18	21	23	174	146
Mkoani	Rain ...	0.74	0.57	5.38	22.57	24.16	1.74	6.53	1.31	0.41	6.50	14.73	9.81	94.45	88.57
	Wet Days ...	2	2	11	23	22	8	11	12	4	18	20	13	146	125
Mtambile	Rain ...	0.34	3.33	6.64	21.63	23.79	2.00	9.21	0.73	0.42	6.12	14.56	15.03	103.80	82.94
	Wet Days ...	4	6	15	28	25	13	16	13	7	20	19	25	191	146
Limbani	Rain ...	...	4.44	4.10	12.91	23.09	2.91	5.68	0.62	0.78	8.04	21.02	11.95	95.54	73.20
	Wet Days ...	...	6	10	22	22	8	12	2	3	17	14	18	134	144
Wesha	Rain ...	0.03	3.55	3.80	15.96	28.95	3.29	6.44	0.79	0.24	6.62	21.98	13.48	105.13	72.39
	Wet Days ...	1	6	11	24	26	16	18	14	4	22	19	10	180	131
Chake Chake	Rain ...	0.02	5.48	2.75	11.88	25.42	1.84	6.37	0.49	0.52	4.86	18.99	9.65	88.27	55.64
	Wet Days ...	1	8	12	22	24	10	11	14	4	15	20	21	162	134
Chambani	Rain ...	...	3.58	1.64	19.12	23.48	2.24	6.53	0 84	0.19	3.22	10.26	9 63	80.73	56.23
	Wet Days ...	...	5	6	16	15	8	4	3	1	8	13	18	97	106
Non-Clove Growing Areas :															
Chukwani	Rain ...	2.79	4.22	3.43	8.26	18.22	0.57	0.55	1.01	0.39	6.74	18.35	7.60	72.13	43.55
	Wet Days ...	3	7	13	18	18	4	4	10	8	19	22	22	149	145
Victoria Gardens	Rain ...	1.15	5.43	3.00	11.22	17.40	1.00	1.02	1.92	0.88	12.78	19.28	9.29	84.44	62.99
	Wet Days ...	3	8	10	21	20	4	5	11	10	19	22	23	156	149
Chwaka	Rain ...	0.64	1.94	5.22	9.78	15.31	4.37	2.05	1.63	1.25	9.12	6.65	10.25	68.21	43.78
	Wet Days ...	2	8	10	25	19	9	9	7	5	13	15	21	143	104
Hanyegwa Mchana	Rain ...	0.96	2.16	4.18	7.85	19.46	3.50	4.05	1.04	1.83	8.53	9.14	8.28	71.25	56.13
	Wet Days ...	5	6	6	18	18	8	7	3	2	11	18	19	121	111
Muongoni	Rain ...	1.44	3.93	2.61	9.82	19.32	2.34	3.52	1.16	0.18	3.79	8.32	8.15	64.58	45.10
	Wet Days ...	5	8	10	21	22	12	11	8	4	12	18	20	151	114
Makunduchi	Rain ...	1.21	1.43	7.11	9.05	21.49	2.57	3.27	0.83	...	6.25	9.81	5.65	68.67	51.62
	Wet Days ...	4	6	7	16	18	6	7	3	...	8	10	14	99	105